

Appl. No. 10/027,343
Amendment dated April 22, 2004
Reply to Office Action of March 17, 2004

AMENDMENTS

Amendments to the Claims

WE CLAIM:

43. (Currently Amended) A reconfigurable surgical apparatus, comprising:
- a surgical instrument assembly formed with a hollow manipulation shaft internally receiving a prime mover activated by an actuator located at a proximal end of the shaft;
- a coupler formed about a distal end of the shaft and having a capture ledge; and
- an interchangeable surgical tool attachable to the coupler and including an anchor adapted to cooperate with and mate to the capture ledge.
44. (Currently Amended) The apparatus according to claim 43, wherein the capture ledge is further formed in the coupler to define at least one lateral ~~slot~~ recess adapted to cooperate with and receive the anchor and capable of transferring rotational force from the prime mover to the tool.
45. (Currently Amended) The apparatus according to claim 44, wherein the anchor is formed as a generally hook shaped tine having an end sized for receipt into the ~~slot~~ recess and capable of transferring rotational force from the prime mover to the tool.
46. (Previously Presented) The apparatus according to claim 43, wherein the anchor is formed with at least one generally hook shaped tine, formed with a frangible portion, that includes an engagement face adapted to cooperate with and non-releasably engage the capture

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ledge, and the tine to capture ledge engagement is capable of transferring rotational force from the prime mover to the tool.

47. (Previously Presented) The apparatus according to claim 43, wherein the anchor is formed with a frangible portion designed to break in an orientation substantially orthogonal to a direction of translation of the prime mover.

48. (Currently Amended) The apparatus according to claim 46, wherein the frangible portion is substantially sealed from an exterior environment by the coupler and the manipulation shaft.

49. (Currently Amended) The apparatus according to claim 44, wherein the anchor is formed with a frangible portion adapted to cooperate with and be removably received in the ~~slot~~ recess after the frangible portion of the anchor has been severed.

50. (Currently Amended) A reconfigurable surgical apparatus, comprising:
a surgical instrument assembly formed with a hollow manipulation shaft internally receiving a prime mover activated by an actuator located at a proximal end of the shaft;
a coupler formed about a distal end of the shaft having a capture ledge that defines a ~~slot~~ recess in the coupler; and
an interchangeable surgical tool adapted to cooperate with and connect to the coupler comprising a frangible portion and an anchor adapted to cooperate with and non-releasably mate to the capture ledge and capable of transferring rotational force from the prime mover to the tool,

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the frangible portion being adapted for receipt in the slot recess after the anchor has been removed from the tool.

51. (Currently Amended) A reconfigurable surgical apparatus, comprising:

a surgical instrument assembly formed with a hollow manipulation shaft internally receiving a prime mover activated by an actuator located at a proximal end of the shaft;

a coupler formed about a distal end of the shaft having a capture ledge that defines a lateral slot recess in the coupler; and

an interchangeable surgical tool for attachment to the coupler and formed with an anchor having a shear notch, the anchor being adapted to cooperate with and non-releasably mate to the capture ledge and capable of transferring rotational force from the prime mover to the tool, and to be severed from the tool about the notch.

52. (Currently Amended) A reconfigurable surgical apparatus, comprising:

a surgical instrument assembly formed with a hollow manipulation shaft internally receiving a prime mover activated by an actuator located at a proximal end of the shaft;

a coupler formed about a distal end of the shaft and incorporating an anchor; and

an interchangeable surgical tool adapted to cooperate with and connect to the coupler and formed with a capture ledge adapted to cooperate with and mate to the anchor and capable of transferring rotational force from the prime mover to the tool.

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53. (Currently Amended) The apparatus according to claim 52, wherein the capture ledge is further formed in the tool to define at least one lateral ~~slot~~ recess adapted to cooperate with and non-releasably receive the anchor.

54. (Currently Amended) The apparatus according to claim 53, wherein the anchor is formed as a generally hook shaped tine having an end sized for non-releasable receipt into the ~~slot~~ recess.

55. (Currently Amended) The apparatus according to claim 52, wherein the anchor is formed with at least one generally hook shaped tine that includes an engagement face adapted to cooperate with and non-releasably engage the capture ledge.

56. (Currently Amended) A reconfigurable surgical apparatus, comprising:
a surgical instrument assembly formed with a hollow manipulation shaft internally receiving a prime mover activated by an actuator located at a proximal end of the shaft;
a coupler formed about a distal end of the shaft to have a generally hook shaped anchor having an engagement face; and
an interchangeable surgical tool formed at an end with a capture ledge that defines a lateral ~~slot~~ recess in the tool, the ledge being adapted to cooperate with and mate to the engagement face and capable of transferring rotational force from the prime mover to the tool.

57. (Currently Amended) A reconfigurable surgical apparatus, comprising:

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a surgical instrument assembly formed with a hollow manipulation shaft internally receiving a prime mover activated by an actuator located at a proximal end of the shaft;
a coupler formed about a distal end of the shaft and formed with an anchor; and
an interchangeable surgical tool configured to connect to the coupler and formed with a reciprocating capture member adapted to cooperate with and non-releasably mate to the anchor and capable of transferring rotational force from the prime mover to the tool.

58. (Currently Amended) The apparatus according to claim 57, wherein the capture member is further formed in the tool to define at least one lateral recess adapted to cooperate with and receive the anchor.

59. (Previously Presented) The apparatus according to claim 58, wherein the anchor is formed as a generally hook shaped tine having an end sized for receipt into the recess.

60. (Currently Amended) The apparatus according to claim 57, wherein the anchor is formed with at least one generally hook shaped tine that includes an engagement face adapted to cooperate with and engage the capture ledge.

61. (Currently Amended) A reconfigurable surgical tool, comprising:
a surgical instrument assembly formed with a hollow manipulation shaft internally receiving a prime mover activated by an actuator located at a proximal end of the shaft;
a coupler formed about a distal end of the shaft and including a receiver having an engagement ledge and shelf; and

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an interchangeable surgical tool attachable to the coupler that includes an engager adapted to cooperate with and mate to the receiver.

62. (Currently Amended) The apparatus according to claim 61, wherein the receiver further defines a generally hook shaped recess adapted to cooperate with and mate to the engager and capable of transferring rotational force from the prime mover to the tool.

63. (Currently Amended) The apparatus according to claim 61, wherein the engager is further formed with a generally hook shaped projection adapted to cooperate with and mate to the receiver and capable of transferring rotational force from the prime mover to the tool.

64. (Previously Presented) The apparatus according to claim 61, wherein the engager is formed with a frangible portion designed to break in an orientation substantially orthogonal to the direction of translation of the prime mover.

65. (Previously Presented) The apparatus according to claim 64, wherein the frangible portion is sealed from an exterior environment by the coupler and the manipulation shaft.

66. (Currently Amended) A reconfigurable surgical tool, comprising:
a surgical instrument assembly formed with a hollow manipulation shaft internally receiving a prime mover activated by an actuator located at a proximal end of the shaft;
a coupler formed about a distal end of the shaft and formed with an engager; and

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an interchangeable surgical tool formed with a receiver formed with an engagement ledge and shelf and adapted to cooperate with mate to the engager.

67. (Previously Presented) The apparatus according to claim 66, wherein the receiver is further formed to define a generally hook shaped recess sized to non-releasably receive the engager and capable of transferring rotational force from the prime mover to the tool.

68. (Previously Presented) The apparatus according to claim 66, wherein the engager further incorporates a generally hook shaped projection adapted for non-releasable receipt in the recess to releasably mate to the receiver and capable of transferring rotational force from the prime mover to the tool.

69. (Previously Presented) The apparatus according to claim 66, wherein the engager is formed with a frangible portion designed to break in an orientation substantially orthogonal to the direction of translation of the prime mover.

70. (Previously Presented) The apparatus according to claim 69, wherein the frangible portion is sealed from an exterior environment by the coupler and the manipulation shaft.

71. (Previously Presented) A means for performing an intracorporeal surgical procedure, comprising:

a means for imparting a range of motion;

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a means for defining an intracorporeal passageway connected at a proximal end to the motion imparting means, the passageway being internally received with a means for transmitting the imparted range of motion;

a means for distally coupling the passageway means that defines a means for interchangeably capturing;

an interchangeable means for performing a surgical intervention that includes a means for mating the intervention means to the capturing means; and

wherein the interchangeable intervention means is, when mated to the capturing means, remotely actuatable by operation of the motion imparting means.

72. (Currently Amended) The means for performing an intracorporeal surgical procedure according to claim 71, wherein the capturing means is further formed in the coupling means to define at least means for defining a lateral slot recess adapted to cooperate with and receive the mating means and capable of transmitting rotational force between the motion imparting means and the interchangeable intervention means.

73. (Currently Amended) The means for performing an intracorporeal surgical procedure according to claim 72, wherein the mating means is formed as a generally hook shaped tine having an end sized for receipt into the slot recess and capable of transmitting rotational force between the motion imparting means and the interchangeable intervention means.

74. (Currently Amended) The means for performing an intracorporeal surgical procedure according to claim 71, wherein the mating means is formed with at least one generally hook

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shaped tine that includes an engagement face adapted to cooperate with and engage the means for capturing and the mating means is capable of transmitting rotational force between the motion imparting means and the interchangeable intervention means.

75. (Previously Presented) The means for performing an intracorporeal surgical procedure according to claim 71, wherein the means for mating is further formed with a means for defining a frangible portion of the mating means designed to break in an orientation substantially orthogonal to a direction of translation of the motion imparting means.

76. (Previously Presented) The means for performing an intracorporeal surgical procedure according to claim 75, wherein the frangible portion defining means is further formed with a means to define a reduced cross section of the mating means and the frangible portion defining means is substantially sealed from an exterior environment by the passageway means and the coupling means.

77. (Currently Amended) The means for performing an intracorporeal surgical procedure according to claim 72, wherein the mating means is formed with a frangible portion defining means adapted to cooperate with and be removably received in the ~~slot~~ recess after the frangible portion defining means has been severed.

78. (Previously Presented) A means for performing an intracorporeal surgical procedure, comprising:

a means for imparting a range of motion;

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a means for defining an intracorporeal passageway connected at a proximal end to the motion imparting means, the passageway being internally received with a means for transmitting the imparted range of motion;

a means for distally coupling the passageway means that defines a means for anchoring;

an interchangeable means for performing a surgical intervention that includes a means for capturing the anchoring means; and

wherein the interchangeable intervention means is, when mated to the anchoring means, remotely actuable by operation of the motion imparting means and capable of transmitting rotational force between the motion imparting means and the interchangeable intervention means.

79. (Currently Amended) The means for performing an intracorporeal surgical procedure according to claim 78, wherein the capturing means is further formed in the intervention means to define at least one means for defining a lateral ~~slot~~ recess adapted to cooperate with and non-releasably receive the anchoring means.

80. (Currently Amended) The means for performing an intracorporeal surgical procedure according to claim 79, wherein the anchoring means is formed as a generally hook shaped tine having an end sized for non-releasable receipt into the ~~slot~~ recess.

81. (Currently Amended) The means for performing an intracorporeal surgical procedure according to claim 78, wherein the anchoring means is formed with at least one generally hook

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shaped tine that includes an engagement face adapted to cooperate with and non-releasably engage the means for capturing.

82. (Previously Presented) The means for performing an intracorporeal surgical procedure according to claim 78, wherein the means for anchoring is further formed with a means for defining a frangible portion of the anchoring means designed to break in an orientation substantially orthogonal to a direction of translation of the motion imparting means.

83. (Previously Presented) The means for performing an intracorporeal surgical procedure according to claim 82, wherein the frangible portion defining means is further formed with a means to define a reduced cross section of the anchoring means and the frangible portion defining means is substantially sealed from an exterior environment by the passageway means and the coupling means.

84. (Currently Amended) The means for performing an intracorporeal surgical procedure according to claim 79, wherein the anchoring means is formed with a frangible portion defining means adapted to cooperate with and be removably received in the ~~slot~~ recess after the frangible portion defining means has been severed.